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MATERIAL-SAVING PIZZA CARTON**CROSS-REFERENCES TO RELATED APPLICATIONS**

10 This is a continuation-in-part application of
my application Serial No. 10/431,984, entitled
"Material-saving Blank and Box," filed May 8, 2003.

FIELD OF THE INVENTION

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This invention relates to packaging in
general and in particular to boxes and box blanks
for food products such as pizza and the like.

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DESCRIPTION OF PRIOR ART

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Each year thousands of pizza businesses sell
millions of hot pizzas for delivery and carry-out.
The success of these businesses depends to an extent
on the cost and functionality of the boxes used for
packaging the product. Ideally, these boxes should
be cost-effective and easy to use.

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The instant invention pertains to a blank and
box that contains several structural enhancements
that are applicable to a prior invention of mine
disclosed in Correll U.S. Patent 6,547,125 granted
April 15, 2003, and entitled "Material-saving Food
Carton." As such, the structure of the instant

invention is quite similar to that of Correll '125, with deviations occurring in the particular areas of structural innovation. The preferred embodiment of the invention disclosed in this prior patent happens
5 to be a non-fastened, non-rectangular, some-slanting-wall box having a full-length cover panel. Therefore, where applicable the disclosure, discussion, and terminology contained within this U.S. Patent 6,547,125 is included herein by this
10 reference thereto. In addition, the instant invention also relates to a prior invention of mine disclosed in U.S. patent application serial number 10/431,984 filed May 8, 2003, and entitled "Material-saving Blank and Box." As such, the
15 structure of the instant invention is quite similar to that of patent application 10/431,984, with deviations occurring in the particular areas of structural innovation. Therefore, where applicable the disclosure, discussion, and terminology
20 contained within this U.S. patent application serial number 10/431,984 is also included herein by this reference thereto.

One of the ways of reducing the amount of
25 material required for making a box blank is to design the blank so that it can be oriented 180 degrees to an adjacent similar blank and then mated (or nested) along the adjacent sides of the two blanks. This technique has been done for decades
30 within the packaging industry. One example is disclosed in Lighter U.S. Patent 2,435,283 granted February 3, 1948. This patent shows a blank having a cover side flap that has a shorter height than the side wall of the blank, thereby allowing one blank

to be oriented 180 degrees to a similar adjacent blank and then mated together for manufacture.

5 The prior art also discloses Zion et al. U.S. Patent 4,765,534 granted August 23, 1988; Deiger U.S. Patent 4,919,326 granted April 24, 1990; Philips et al. U.S. Patent 5,702,054 granted December 30, 1997; and Correll U.S. Patent 6,206,277 granted March 27, 2001. Each of these patents
10 discloses a particular type of structure comprising a side wall attached to a bottom panel, a corner panel attached to an end of the side wall, a connector panel attached to a bottom edge of the corner panel, and an end wall panel attached to the
15 bottom panel. In addition, Deiger, Philips et al., and Correll '277 each also disclose an end flap attached to an end of the end wall panel and also to the connector panel.

20 Philips et al., in particular, depicts the structure of the pizza box and box blank currently in use by Domino's Pizza.

25 Each of the above-cited prior art has a particular drawback. Specifically, Lighter discloses how to mate adjacent blanks of a particular structure but does not disclose how to mate adjacent blanks having a structure similar to that of the Domino's Pizza pizza box blank (or Philips et al.)

30 Zion et al., Deiger, Philips et al., and Correll '277 disclose how to create a non-slanting end wall on a box having a structure similar to the Domino's Pizza pizza box, but do not disclose how to

5 create a material-saving inward-slanting end wall. Further, they do not disclose how to save material by mating adjacent blanks having a structure similar to that of the Domino's Pizza pizza box blank (or Philips et al.).

10 In addition, Correll U.S. Patent 5,381,949 granted January 17, 1995, and Correll U.S. patent 5,713,509 granted February 3, 1998, also disclose adjacent nesting blanks. However, they do not disclose how to mate adjacent blanks having a structure similar to that of the Domino's Pizza pizza box blank (or Philips et al.)

15 In addition to material savings derived from nesting of adjacent blanks, it would be desirable to have a pizza box that has a structure that affords a unique shape. One way this can be achieved is by having non-parallel side walls. Prior art structures
20 of this type are disclosed in Lacasa et al. U.S. Patent 4,620,666 granted November 4, 1986; Geho U.S. Patent 5,118,032 granted June 2, 1992; Correll U.S. Patent 5,918,797 granted July 6, 1999; and Correll U.S. Patent 5,961,035 granted October 5, 1999.
25 However, they do not disclose non-parallel side walls on a box and blank of the type disclosed in my U.S. Patent 6,547,125. Further, they do not disclose how to nest adjacent blanks during manufacture to achieve optimal material savings when a blank has
30 non-parallel side walls. Finally, they do not disclose a unique assembly of wall panel angles and lengths which provides a uniquely structured carton shape.

In conclusion, it would be highly desirable to provide a pizza box and blank that overcomes the above-cited drawbacks and further enhances the box and blank disclosed in Correll U.S. Patent 6,547,125, and, thereby, satisfies the need for further material savings, ease of use, and unique appearance. Nothing in the prior art does that. However, my invention does.

SUMMARY OF THE INVENTION

My invention is a carton and/or blank that can incorporate one or more of the following features:

1) A unique carton and blank structure similar to that shown in Correll U.S. Patent 6,547,125 and including a side wall with a diagonal corner panel attached to an end thereof and a connector panel attached to a bottom edge of the corner panel and to the bottom panel and being free of attachment to any other panel;

2) A unique carton and blank structure similar to that shown in Correll U.S. Patent 6,547,125 and including a cover closure comprising a cover flap disposed within a flap-receiving slot disposed in a front wall structure;

3) A unique carton having an end wall disposed at an acute angle to a bottom panel and left and right side walls disposed at a non-acute angle to the bottom panel and disposed non-parallel to one another;

5 4) A unique carton having left and right side walls each with a diagonal corner panel and a connector panel attached to a bottom edge of the corner panel and overlying a bottom panel and with the left and right side walls disposed non-parallel to one another;

10 5) A unique box blank having left and right side walls disposed non-parallel to one another and the lower edge of left and right cover side flaps disposed non-oblique to the top edge of the left and right side walls;

15 6) A unique box blank having left and right side walls disposed non-parallel to one another and gradual-diminishing-height cover side flaps;

20 7) First and second blanks disposed side-by-side and each having non-parallel left and right side walls and gradual-diminishing-height cover side flaps and a top edge of a side wall of the first blank being disposed non-oblique to the top edge of the corresponding side wall of the second blank;

25 8) First and second blanks disposed side-by-side and each having non-parallel left and right side walls and gradual-diminishing-height cover side flaps and a lower edge of the cover side flap of each blank being disposed non-oblique to at least one of the lower edge of the cover side flap and the top edge of the side wall of the other blank; and

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5 9) A unique box having non-parallel left and right rearward side walls disposed at a first obtuse angle to a rear end wall and non-parallel left and right forward side walls disposed at a second obtuse angle to the rearward side walls, with the first obtuse angle being less than the second obtuse angle.

10 My invention typically would be used for packaging relatively flat food products such as pizza; however, it could take other forms for other purposes, as well.

15 A complete understanding of the invention can be obtained from the detailed description that follows.

OBJECT AND ADVANTAGES

20 The main object and advantages of my invention are as follows:

25 A main object of the instant invention is to enhance the box and blank disclosed in Correll U.S. Patent 6,547,125 entitled "Material-saving Food Carton" and make it more adaptable to a variety of carton shapes, structural configurations, and material-saving opportunities.

30 A first advantage of my invention is manufacturing flexibility or the opportunity to create a carton having an appearance and functionality similar to that of the box disclosed in Correll U.S. Patent 6,547,125 but while using a

slightly different side wall structure and/or cover closure structure.

5 A second advantage of my invention is an opportunity to create a box having non-parallel side walls and which can be manufactured with a material savings and has a unique shape.

10 Further objects and advantages of the invention will become apparent from consideration of the following detailed description, related drawings, and appended claims.

15 BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of multiple units of a preferred embodiment of the box blank.

20 FIG. 2 is a perspective view of a carton erected from the blank.

FIG. 3 is a plan view of a section of the blank.

25 FIG. 4 is a side sectional view of the carton taken along line 4—4 of FIG. 2 (with the carton holding a pizza).

30 FIG. 5 is a front sectional view of the carton taken along line 5—5 of FIG. 2.

FIG. 6 is a top view of the carton (with the cover removed).

LIST OF REFERENCE NUMERALS

5 Within a drawing, closely related components have the same number but different alphabetic suffixes. Between drawings, like reference numerals designate corresponding parts.

	10	blank of the preferred embodiment
	10a	blank of the preferred embodiment
10	12	box of the preferred embodiment
	20	bottom panel
	22	rear end wall
	24	rear wall fold line
	30	side wall structure
15	32	side wall (a.k.a. rearward side wall)
	34	side wall fold line
	36	diagonal corner panel (a.k.a. forward side wall)
	37	fold line
20	38	connector panel
	39	fold line (bottom edge of corner panel)
	40	front end of diagonal corner panel
	42	acute angle
	44	rear end of side wall
25	46	oblique angle (acute angle)
	48	top edge of side wall
	50	front wall structure
	52	front end wall
	54	front wall fold line
30	56	ancillary panel
	58	flap-receiving means
	59	outer edge
	60	cover
	62	cover panel

- 64 cover panel fold line
- 66 cover front flap
- 68 cover front flap fold line
- 69 bottom edge of cover front flap
- 5 70 cover side flap structure
- 72 cover side flap
- 74 cover side flap fold line
- 75 front end of cover side flap
- 76 corner flap
- 10 78 corner flap fold line
- 80 oblique angle (obtuse angle)
- 82 lower edge of corner flap
- 84 lower edge of cover side flap
- 90 front-to-rear length of bottom panel
- 15 92 front-to-rear length of cover panel
- 101 pizza
- 103 acute angle
- 105 acute angle
- 106 imaginary extension line of lower edge of cover
- 20 side flap
- 108 imaginary extension line of top edge of side wall
- 110 first height location
- 112 second height location
- 25 114 oblique angle (obtuse angle)
- 116 oblique angle (obtuse angle)
- 118 oblique angle (obtuse angle)
- 119 oblique angle (obtuse angle)
- 120 length of rear end wall
- 30 122 length of rearward side wall (a.k.a. side wall)
- 124 length of forward side wall (a.k.a. diagonal corner panel)
- 126 length of front end wall

DESCRIPTION OF A PREFERRED EMBODIMENT

5 The instant invention constitutes, in large part, improvements intended for use, among other things, in the box and blank disclosed in Correll U.S. Patent 6,547,125 granted April 15, 2003, and entitled "Material-saving Food Carton." As such, the structure of the instant invention is somewhat similar to that of Correll '125, with deviations occurring in the particular areas of structural innovation. Therefore, where applicable, the disclosure, discussion, and terminology contained within this U.S. Patent 6,547,125 is hereby included herein by this reference thereto. In addition, the instant invention also relates to a prior invention of mine disclosed in U.S. patent application serial number 10/431,984 filed May 8, 2003, and entitled "Material-saving Blank and Box." As such, the structure of the instant invention is somewhat similar to that of patent application 10/431,984, with deviations occurring in the particular areas of structural innovation. Therefore, where applicable, the disclosure, discussion, and terminology contained within this U.S. patent application serial number 10/431,984 is included herein by this reference thereto.

30 The preferred embodiment is created from corrugated board; however, other foldable materials can be used, as well. The intended use for the embodiment is for erecting into a pizza carton, or box. However, it will be appreciated, as the description proceeds, that my invention may be realized in different embodiments and used in

differing applications.

FIG. 1 shows a first blank 10 and a second blank 10a oriented at 180 degrees to blank 10. Even though only a partial section of blank 10a is depicted, this blank is of identical structure to that of blank 10. FIG. 2 shows a fully-erected pizza carton 12 created from blank 10. Referenced components are labeled in FIG. 1; selected components are labeled in other Figures. Corresponding parts between drawings share a same reference numeral. It is noted that the invention is bilaterally symmetrical (i.e., having identical left and right sides). Therefore, pairs of opposing like components are to be found, with one item of the pair on each side of the blank or carton. For simplicity of labeling, each component of the opposing pair will have the same reference numeral. Also, a pair may be indicated by a numeral on one side of the drawing only. Where this occurs, it is to be understood that the discussion also applies to the corresponding component on the other side, even though that component may not be numerically labeled.

Structure of the Embodiment

Referring in particular to FIG. 1 which shows blank 10, there is a bottom panel 20, a rear end wall 22 hingedly attached to bottom panel 20 at a rear wall fold line 24, and opposing left and right side wall structures 30.

Each side wall structure 30 comprises a side wall 32 hingedly attached to bottom panel 20 at a side wall fold line 34 which is disposed at an oblique angle 114 (specifically, an obtuse angle) to rear wall fold line 24, a front diagonal corner panel 36 hingedly attached to a front end of side wall 32 at a fold line, a connector panel 38 hingedly attached to a bottom edge 39 of diagonal corner panel 36 at a fold line (also depicted by numeral 39) and to bottom panel 20 at a fold line 37. Front diagonal corner panel 36 has a front end 40 that is obliquely disposed, or at an acute angle 42, to bottom edge 39 (in the preferred embodiment angle 42 is approximately 62 degrees). Side wall 32 has a rear end 44 that is obliquely disposed, or at an acute angle 46, to side wall fold line 34 (in the preferred embodiment angle 46 is approximately 68 degrees). The optimal disposition of fold lines and the sizes of these angles depends on several factors, including the type of corrugated board used in making the blank and the degree of inward-slanting angle desired on front and rear end walls 52/22 of the carton. Therefore, the determination of the optimal disposition of fold lines and the degree of angle between fold lines will likely need to be derived from testing, a function easily accomplished by any box designer skilled in the art.

A couple differences between the box disclosed in Correll U.S. Patent 6,547,125 and the carton of the instant invention are now noted. First, in the box of Pat. 6,547,125, connector panel 38 is not only attached to diagonal corner panel 36 and to bottom panel 20 but is also attached to end

flap 55 which is part of the front wall structure. Whereas, in the instant invention connector panel 38 is attached only to diagonal corner panel 36 and to bottom panel 20 and is free of attachment to any other panels. This configuration is similar to that disclosed in Zion et al. U.S. Patent 4,765,534.

Second, in the box of Pat. 6,547,125, left and right side walls 32 are parallel to one another and also perpendicular to rear end wall 22. Whereas, in the instant invention side walls 32 (or side wall fold lines 34) are non-parallel to one another and also are at an oblique, or obtuse, angle 114 to rear end wall 22.

A front wall structure 50 comprises a front end wall 52 that is hingedly attached to bottom panel 20 at a front wall fold line 54 and an ancillary panel 56 that is hingedly attached to a top edge of front end wall 52 at a pair of fold lines. Front wall structure 50 further comprises a flap-receiving means 58. In the format of blank 10, flap-receiving means 58 is a slit in the board. In the format of carton 12, flap-receiving means 58 is a slot capable of receiving a cover flap. Finally, ancillary panel 56 has an outer edge 59.

A cover 60 comprises a full-length cover panel 62 hingedly attached to rear end wall 22 at a cover panel fold line 64, a cover front flap 66 hingedly attached to a front edge of cover panel 62 at a cover front flap fold line 68, and left and right cover side flap structures 70. Cover front flap 66 has a bottom edge 69. A difference between

the box disclosed in Correll U.S. Patent 6,547,125 and the carton of the instant invention is now noted. Specifically, in the box of Pat. 6,547,125, cover closure is achieved by having cover front flap 66 disposed between end flaps 55 that are attached to ends of the front end wall. Whereas, in the instant invention cover closure is achieved by having cover front flap 66 disposed within a slot in the front wall structure provided by flap-receiving means 58. This configuration is similar to that disclosed in Zion et al. U.S. Patent 4,765,534 and in numerous other boxes.

Each cover side flap structure 70 comprises a gradual-diminishing-height cover side flap 72 hingedly attached to a side edge of cover panel 62 at a cover side flap fold line 74 that's disposed at an oblique angle 116 (specifically, an obtuse angle) to cover panel fold line 64. The cover side flap has a front end 75 that is free of attachment. The side flap structure further comprises a free-swinging corner flap 76 hingedly attached to a rear end of cover side flap 72 at a corner flap fold line 78. Corner flap fold line 78 is disposed at an oblique angle 80 to cover side flap fold line 74 (specifically, in the preferred embodiment angle 80 is an obtuse angle of approximately 112 degrees). As a general rule, this angle should be greater than 95 degrees and less than 115 degrees, although other degrees are possible. The exact angle of the slope is whatever is needed to retain cover side flap 72 in a proper (vertical) position after blank 10 has been folded into carton 12. The determination of

this angle may require testing, a function easily accomplished by any box designer skilled in the art.

5 It is also noted that corner flap 76 has a lower edge 82 that is non-aligned with a lower edge 84 of cover side flap 72. The determination of the optimal angle of lower edge 82 to lower edge 84 will require testing. It is further noted that lower edge 82 is disposed lower than lower edge 84. Further, it is noted that lower edge 84 is disposed non-parallel to cover side flap fold line 74. This feature enables multiple adjacent blanks to be mated during manufacture for material savings.

15 It is also noted that bottom panel 20 has a front-to-rear length 90 and cover panel 62 has a front-to-rear length 92.

20 In a five centimeter (two-inch) high pizza box in the format of the preferred embodiment, front-to-rear length 92 can be substantially shorter than front-to-rear length 90 by approximately thirty eight millimeters (one-and-a-half inch).

25 Once blank 10 is set up into carton 12 a number of special structural arrangements occur. As illustrated in FIG. 4 which shows a side sectional view of carton 12 containing a recently-cooked round pizza 101 (this is the view taken along line 4—4 of FIG. 2), front and rear end walls 52/22 slant inward at substantially acute angles 103/105 to bottom panel 20. So the purpose in having bottom panel length 90 slightly longer than cover panel length 92 is to create adequate space front-to-rear within the

box cavity for accommodating a properly-sized pizza. As also seen in FIG. 4, the bottom panel's front-to-rear length 90 is slightly longer than the pizza's diameter (by at least six millimeters) and the cover panel's front-to-rear length 92 is substantially shorter than the pizza's diameter (by at least eight millimeters). This arrangement effects a material savings over a similarly-constructed box having all non-slanting walls (i.e., the box shown in Philips et al. U.S. patent 5,702,054).

As can be seen in FIG. 5, which shows a front sectional view of carton 12 taken along line 5—5 of FIG. 2, side walls 32 are disposed at a non-acute angle to bottom panel 20 (specifically, in the preferred embodiment the non-acute angle is a 90 degree angle).

As can be seen in FIG. 2, diagonal corner panels 36 extend diagonally forward from side walls 32. Connector panels 38 overlies bottom panel 20. And front end 40 of those panels abuts front end wall 52. Cover side flaps 72 are disposed exterior to side walls 32 (hence they're sometimes called exterior cover side flaps) and corner flaps 76 are perpendicular to the cover side flaps and disposed between rear end 44 and rear end wall 22. Lower edge 82 of corner flap 76 contacts bottom panel 20, thereby holding cover side flaps 72 in vertical or erected disposition. Cover front flap 66 is disposed in flap-receiving means 58 (which takes the form of a slot in the preferred embodiment).

Referring to FIG. 3 which shows a section of blank 10, a couple unique aspects will now be noted as regards lower edge 84 of cover side flap 72 and top edge 48 of side wall 32. First, it is noted that lower edge 84 is disposed non-parallel to cover side flap fold line 74. This results in the height of cover side flap 72 at the front end being substantially less than the height at the rear end. (At any given location, the height of the cover side flap is the distance between cover side flap fold line 74 and lower edge 84.) This structure makes cover side flap 72 a gradual-diminishing-height cover side flap. As the term is used herein, a "gradual-diminishing-height cover side flap" is a cover side flap that has a lower edge, or a substantial portion of lower edge, that is non-parallel to the cover side flap fold line, thereby causing the cover side flap to have a plurality of differing heights extending over the length of the side flap, thereby resulting in the side flap having a gradually diminishing height extending from a first location to a second location on the flap. To illustrate, referring to FIG. 3 it can be seen that the height of cover side flap 72 diminishes from a first height location 110 to a second height location 112, with the dimensioning arrow at each location representing the height of the cover side flap at that particular location.

Second, it is noted that lower edge 84 is disposed non-oblique to top edge 48. As used herein, the term "disposed non-oblique" as applied to two lines or planes means that those two lines or planes, or the imaginary extension of those lines or

planes, are either aligned or parallel to one another (as opposed to obliquely or perpendicularly disposed to one another). FIG. 3 depicts an imaginary extension line 106 of lower edge 84 and an
5 imaginary extension line 108 of top edge 48 (each depicted by a dashed line). As can be seen, the two lines are parallel; therefore, lower edge 84 and top edge 48 are "disposed non-oblique" to one another.

10 Referring to FIG. 6 which shows a top view of carton 12 (with the cover and ancillary panel removed to simplify illustration), it is noted that the wall panels of the carton constitute a plurality of wall panels having a unique configuration of
15 lengths and angles. First, it is noted that left and right side wall panels 32 constitute a pair of opposing non-parallel rearward side walls that are disposed at an obtuse angle 114 to rear end wall 22. Second, it is noted that left and right diagonal
20 corner panels 36 constitute a pair of opposing non-parallel forward side walls that are disposed at an obtuse angle 118 to the rearward side walls and at an obtuse angle 119 to front end wall 52. Further, it is noted that rear end wall 22 has a length 120,
25 rearward side walls 32 have a length 122, forward side walls 36 have a length 124, and front end wall 52 has a length 126. Finally, it is noted that obtuse angle 114 is less than obtuse angle 118 and rearward side wall length 122 is longer than forward
30 side wall length 124. This configuration of wall panel angles and lengths provides a pizza carton structure and shape unique in the industry. Also, it is noted that obtuse angle 119 is less than 135 degrees and less than angle 118, and front end wall

length 126 is slightly shorter than rear end wall length 120.

Mating of Multiple Blanks During Manufacture

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FIG. 1, which shows identical blanks 10 and 10a oriented at 180 degrees to one another, depicts the configuration of multiple units of the preferred embodiment in a mated configuration for efficient manufacture. Even though only a partial section of blank 10a is depicted, this blank is of identical structure to that of blank 10. Further, in the drawing a small gap exists between the blanks. This gap is provided for clarity of illustration. In the actual manufacture of these blanks this gap would likely not exist and, instead, a substantial portion of the adjacent edges of the blanks would be contiguous, or in contact with one another. (However, in the preferred embodiment, a small knock-out would exist between the adjacent blanks in the region of corner flaps 76.) Specifically, lower edge 84 of cover side flap 72 of each blank contacts, or is contiguous with, top edge 48 of side wall 32 of the other blank. It is further noted that the furthestmost extremities at each end of each blank (constituted by bottom edge 69 of cover front flap 66 and outer edge 59 of ancillary panel 56) are aligned with the furthestmost extremities of the adjacent blank. Further, it is noted that the structural arrangement whereby lower edge 84 is non-parallel to cover flap fold line 74 (or whereby cover side flap 72 is a gradual-diminishing-height cover side flap) enables a mating-type arrangement between the blanks which results in less material

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usage. Still further, it is noted that lower edge 84 of each blank is disposed non-oblique with lower edge 84 and top edge 48 of the other blank. Finally, it is noted that top edge 48 of each blank is disposed non-oblique with top edge 48 of the other blank.

Method for Erecting the Blank into the Carton

Any method used for erecting the blank of Philips et al. '054 patent or Correll '125 patent into a box can be used for erecting the preferred embodiment into a box.

Specifically, the following method can be used, which is highly efficient.

First, position the blank so that it's horizontal and with the inside surface up and cover front flap 66 next to the abdomen.

Second, with your hands placed near the rear end of cover side flaps 72, simultaneously fold cover side flaps 72 inward and, with your index fingers, fold rear corner flaps 76 inward.

Third, while keeping your hands in that position (i.e., at the rear end of cover side flaps 72) and while holding the cover side flaps upright, with your fingers pull rear end wall 22 upright.

Fourth, fold bottom panel 20 downward to about halfway closed.

Fifth, fold side walls 32 inward and position them interior to cover side flaps 72 and then fold bottom panel 20 down until the box is all the way, or almost all the way, closed.

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Sixth, turn the partially-erected box to a vertical position with front wall structure 50 up.

Seventh, open cover panel 62 about three inches and then, with your index fingers, push both front diagonal corner panels 36 inward. Then fold front wall structure 50 to an upright position and with ancillary panel 56 extending inward (perpendicular to front end wall 52).

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Eighth, fold cover front flap 66 down and tuck it into the slot produced by flap-receiving means 58 and close the box completely. This step can sometimes be most easily executed with the rear end of the box held against a surface. This can be accomplished by either (a) holding the box vertically with the rear end resting on a table or (b) holding the box horizontally with the rear end held against your abdomen.

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Definition of Key Terms

Certain terms are used in the claims for describing the invention. To insure clarity of meaning those terms are now specifically defined as used herein.

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A "front-to-rear length of a cover panel" is the distance between the cover panel fold line

(connecting the cover panel to the rear wall) and the cover front flap fold line (connecting the cover front flap to the cover panel). The line of measurement is perpendicular to the cover panel fold line and is measured at the furthest distance between the two fold lines.

A "front-to-rear length of a bottom panel" is the distance between the rear wall fold line (connecting the rear end wall to the bottom panel) and the front wall fold line (connecting the front end wall to the bottom panel). The line of measurement is perpendicular to the rear wall fold line and is measured at the furthest distance between the two fold lines.

A "substantially acute angle" is considered herein to be an angle of 85 degrees or less.

A "substantially non-acute angle" is considered herein to be an angle greater than 85 degrees.

A "full-length cover panel" is a cover panel that's hingedly attached to a wall of the box and extends from that wall substantially all the way to an opposing wall structure.

An "inward-slanting wall" is a wall disposed at an acute angle to a bottom panel.

A "perimeter edge of a cover panel" is one of the front, rear, left, or right side edges of a cover panel.

5 A "free-swinging" flap or panel is one that is attached to only one other flap or panel after the blank has been erected into a box. An example is corner flap 76.

10 A "height of a cover side flap" is the distance between the cover side flap fold line and the lower edge of the cover side flap. A cover side flap that has a lower edge disposed non-parallel to the cover side flap fold line has a plurality of differing heights extending over the length of the side flap.

15 A "gradual-diminishing-height cover side flap" is a cover side flap that has a lower edge, or a substantial portion of lower edge, that is non-parallel to the cover side flap fold line, thereby causing the cover side flap to have a plurality of
20 differing heights extending over the length of the side flap, thereby resulting in the side flap having a gradually diminishing height extending from a first height location to a second height location. It is noted that an inward-angling, or beveled, end
25 edge of a cover side flap is not considered to be a lower edge of the cover side flap and, therefore, does not render a cover side flap to be a gradual-diminishing-height cover side flap.

30 When the term "disposed non-oblique" is used to describe the relationship of two lines or planes it means that those two lines or planes, or the imaginary extension of those lines or planes, are either aligned or parallel to one another (as

opposed to obliquely or perpendicularly disposed to one another).

5 The term "rearward side wall" refers to a side wall disposed adjacent to a rear end wall. The term "forward side wall" refers to a side wall disposed adjacent to and forward of a rearward side wall. In carton 12, side wall 32 constitutes a particular type of rearward side wall and diagonal corner panel 36 constitutes a particular type of forward side wall.

10 The terms "carton" and "box" are synonymous and used interchangeably herein.

15 Within the drawing of blank 10, a fold line between component parts of the invention is depicted with a dashed line. Within the context of this invention, a fold line can be created by a number of means such as, for example, by a crease or score in the board, by a series of aligned spaced short slits in the board, by a combination of aligned spaced short and long slits, or by a combination of a slit and a score.

20 In some cases, when a longer slit is bounded on the ends by a series of shorter slits or a score, the longer slit may be slightly offset in alignment from the shorter slits or score for the purpose of creating a slot along the fold line when the blank is set up into a box. Such an offset slit may be referred to herein as a "slot-forming slit." Nonetheless, the entire combination of long and

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short slits is considered to constitute a single fold line unless otherwise indicated.

5 In addition, to create a fold line where one panel is folded 180 degrees to lay parallel on another panel, the fold line may constitute two narrowly-spaced parallel scores or series of aligned slits. In this case, the two narrowly-spaced parallel scores or series of aligned slits
10 constitute a single fold line unless otherwise indicated.

In conclusion, as referred to herein, a fold line is any line between two points on the blank or box along which the board is intended to be folded
15 when the blank is being erected into a box or when the box is being manipulated as described herein. The type of fold lines shown in the drawings are presently preferred but it will be appreciated that
20 other methods known to those skilled in the art may be used.

CONCLUSION, RAMIFICATIONS, AND SCOPE

25 I have disclosed a pizza carton and blank embodying one or more of the following structural features:

30 1) A unique carton and blank structure similar to that shown in Correll U.S. Patent 6,547,125 and including a side wall with a diagonal corner panel attached to an end thereof and a connector panel attached to a bottom edge of the

corner panel and to the bottom panel and being free of attachment to any other panel;

5 2) A unique carton and blank structure similar to that shown in Correll U.S. Patent 6,547,125 and including a cover closure comprising a cover flap disposed within a flap-receiving slot disposed in a front wall structure;

10 3) A unique carton having an end wall disposed at an acute angle to a bottom panel and left and right side walls disposed at a non-acute angle to the bottom panel and disposed non-parallel to one another;

15 4) A unique carton having left and right side walls each with a diagonal corner panel and a connector panel attached to a bottom edge of the corner panel and overlying a bottom panel and with
20 the left and right side walls disposed non-parallel to one another;

25 5) A unique box blank having left and right side walls disposed non-parallel to one another and the lower edge of left and right cover side flaps disposed non-oblique to the top edge of the left and right side walls;

30 6) A unique box blank having left and right side walls disposed non-parallel to one another and gradual-diminishing-height cover side flaps;

7) First and second blanks disposed side-by-side and each having non-parallel left and right

side walls and gradual-diminishing-height cover side flaps and a top edge of a side wall of the first blank being disposed non-oblique to the top edge of the corresponding side wall of the second blank;

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8) First and second blanks disposed side-by-side and each having non-parallel left and right side walls and gradual-diminishing-height cover side flaps and a lower edge of the cover side flap of each blank being disposed non-oblique to at least one of the lower edge of the cover side flap and the top edge of the side wall of the other blank; and

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9) A unique box having non-parallel left and right rearward side walls disposed at a first obtuse angle to a rear end wall and non-parallel left and right forward side walls disposed at a second obtuse angle to the rearward side walls, with the first obtuse angle being less than the second obtuse angle.

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Within the foregoing discussion of the invention, the labeling of any components by a numerical adjective (i.e., "first," "second," etc.) is for reference purposes only and does not denote any particular location of the components within the blank or carton. Further, the term "hingedly attached" refers to two panels (or a panel and a flap) joined together at a fold line, and does not imply any degree of movability of the panels in the erected box format.

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The illustrated number, size, shape, type, and placement of components represent the preferred

embodiment; however, many other combinations and configurations are possible within the scope of the invention. Examples of some alternate configurations are described below.

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The foregoing discussion has pertained mainly to packaging relatively flat food products such as pizza. However, it should be realized that my invention could be used for other purposes, as well.

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In conclusion, it is understood that the invention is not to be limited to the disclosed embodiments but, on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims, which scope is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures as is permitted under the law.

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